

Serial No.: 10/068,315

PATENT APPLICATION  
Docket No.: NC 83,665

## REMARKS

Claims 1-19 and 22-52 are pending in the application. No claims are presently allowed.

Claim 1 is amended to clarify that the composite comprises a mixture of matrix material and transfer material. Support for this amendment is found in paragraph 0068, lines 3-5. The claim is also amended to cancel the erroneous extra word "comprises."

## Claim Rejections – 35 U.S.C. § 102

Claims 1-8, 18, 19, 22-25, and 36-39 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Joyce, Jr. et al., US 5,292,559.

Claim 1 is directed to a method for laser deposition. Laser energy desorbs a portion of a composite at a defined target location on a target substrate. The composite comprises a mixture of matrix material and transfer material. The desorbed composite is deposited onto a receiving substrate.

Joyce discloses a method of laser transfer using a laser transparent substrate with a laser absorptive polymer film and a metal containing composite on the film (abstract). The film is a multi-layered composite comprising laser absorptive polymer 12a, gold 12b, nickel 12c, and gold-flash 12d (Fig. 2 and col. 4, lines 32-59).

Claim 1 as amended recites a mixture of transfer and matrix materials. Thus, both materials are found throughout the thickness of the composite coating on the target substrate. However, Joyce discloses discrete layers of separate materials that are not in a mixture. This limitation is not anticipated by Joyce.

Claims 2-8, 18, 19, 22-25, and 36-39 depend from and contain all the limitations of claim 1 and are asserted to distinguish from the references in the same manner as claim 1.

Further, as to claim 22, Joyce does not disclose a non-planar receiving substrate.

As to claim 24, Joyce does not disclose any functionalization of the receiving substrate, nor any of the specific functionalizations recited in claim 25.

## Claim Rejections – 35 U.S.C. § 103

Claims 14-17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Joyce.

In order to make a *prima facie* case of obviousness, each claim limitation must be

Serial No.: 10/068,315

PATENT APPLICATION  
Docket No.: NC 83,665

disclosed in the references. As explained above, Joyce does not disclose the limitation in claim 1 (14-17 dependent thereon) that the composite comprises a mixture of matrix and transfer materials.

Claims 9-13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Joyce in view of Ross, US 5,743,560.

Claims 9-13 are directed to laser-machining of the receiving substrate and/or the deposited transfer material. Ross discloses laser-texturing of a metallic layer deposited on a glass substrate (Abstract) and laser-texturing of a glass substrate (col. 2, lines 10-12).

Claims 9-13 depend from and contain all the limitations of claim 1 and are asserted to distinguish from Joyce in the same manner as claim 1, in that Joyce does not disclose a mixture of transfer and matrix materials. Similarly, Ross does not disclose such a mixture. As neither of the references discloses the limitation, a *prima facie* case of obviousness has not been made.

Claims 26-35 and 40-52 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Joyce in view of Baer et al., US 6,495,195.

Claims 26-35 are directed to transfer materials that are biomaterials, including living or active biomaterials. Claims 40-52 are to methods of making various devices. Baer discloses a process for transferring tissue to a thermoplastic film by melting the film with a laser and adhering the tissue to the melted film (col. 1, lines 26-35).

Claims 26-35 and 40-52 depend from and contain all the limitations of claim 1 and are asserted to distinguish from Joyce in the same manner as claim 1, in that Joyce does not disclose a mixture of transfer and matrix materials. Neither does Baer disclose such a mixture of a transfer and matrix materials. The process of Baer is entirely different from the presently claimed process. In Baer, the laser interacts only with the film, not with the tissue. This is not a laser transfer process, but rather a laser interaction with a polymer film which induces a morphological change in the polymer, which then results in an adhesion process between the biomaterial and polymer. The only transfer occurs when the film is peeled off of the sample and the adhered tissue goes with the film. In the present invention, the composite transfers through space/air in a free-flight manner. In Baer, the tissue is attached to a surface at all times. Also, in Baer, there is no matrix material that is desorbed by the laser. As neither of the references

Serial No.: 10/068,315

PATENT APPLICATION  
Docket No.: NC 83,665

discloses the limitation, a *prima facie* case of obviousness has not been made.

As to claims 26-35, these claims are to transfers of biomaterials. Such materials would be expected to be completely destroyed if vaporized using the method of Joyce, due to the high laser energy used. For example Joyce mentions that a range of 8-12 J/cm<sup>2</sup> should be used (col. 5, line 42). The present application states a typical range of 50 to about 200 mJ/cm<sup>2</sup> (0045), although the claims are not limited to this range. The energy in Joyce may be hundreds of times that used in the present invention to transfer biomaterial. Further, in Joyce, the transferred material slams into the substrate at a pressure of 15-20 kbars (col. 3, lines 30-32). At such extreme energies and pressures, the biomaterial would denature, die, or be completely vaporized and the process would be useless. Claim 28 recites that the biomaterial remains living or active on the receiving substrate.

There is no motivation to combine Baer with Joyce and no reasonable expectation of success of the combination as the processes are incompatible with each other. They expose different elements to laser beams that approach from opposite directions. There is nothing in the references to suggest that the tissue of Baer could be transferred intact according to the methods of Joyce, or that it could remain living or active.

As to claims 40-52, the recited devices are not disclosed in either of the references.

#### Terminal Disclaimer

The Office Action of 06/22/2004 acknowledged Applicants' terminal disclaimer over 10/141,820, but not the terminal disclaimer over 10/237,072 filed at the same time (05/25/2004).

A terminal disclaimer over 10/068,364 is also attached, without admitting any obviousness of the present invention.

In view of the foregoing, it is submitted that the application is now in condition for allowance.

In the event that a fee is required, please charge the fee to Deposit Account No. 50-0281,

Serial No.: 10/068,315

PATENT APPLICATION  
Docket No.: NC 83,665

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Respectfully submitted,



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